Supplementary Material (ESI) for Journal of Materials Chemistry


# Gas Phase Synthesis of Titania with Aerogel Character and its Application as a Support in Catalysis

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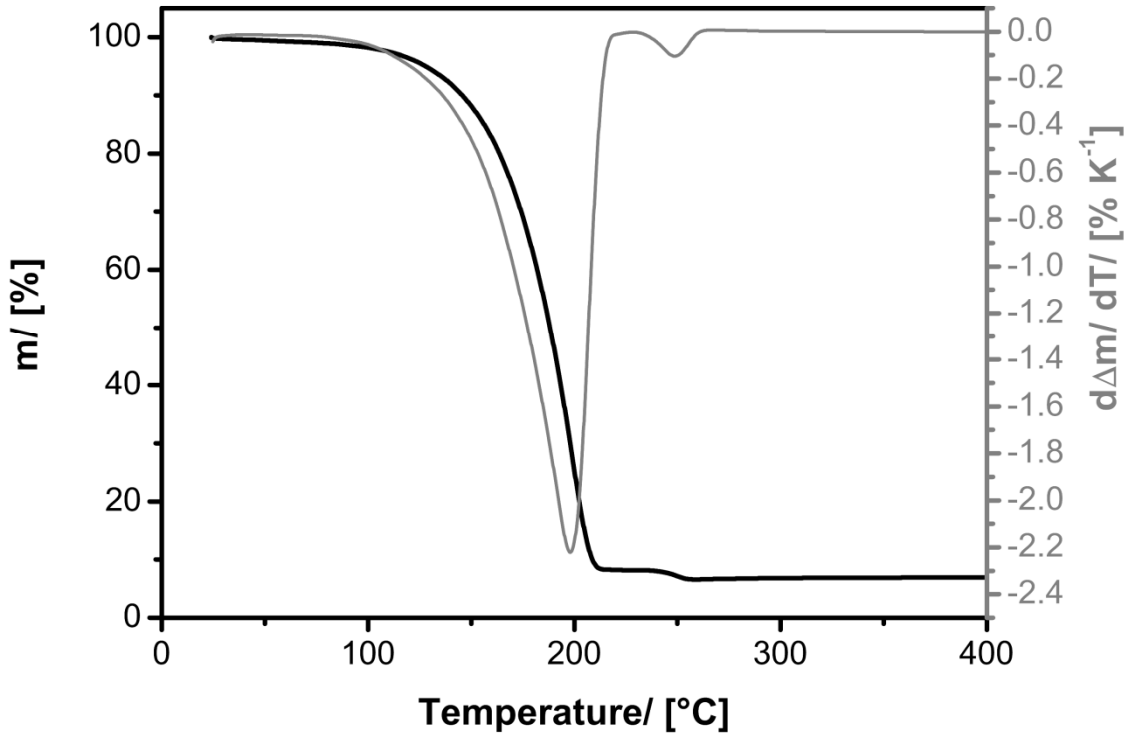
**SUPPLEMENTARY INFORMATION**

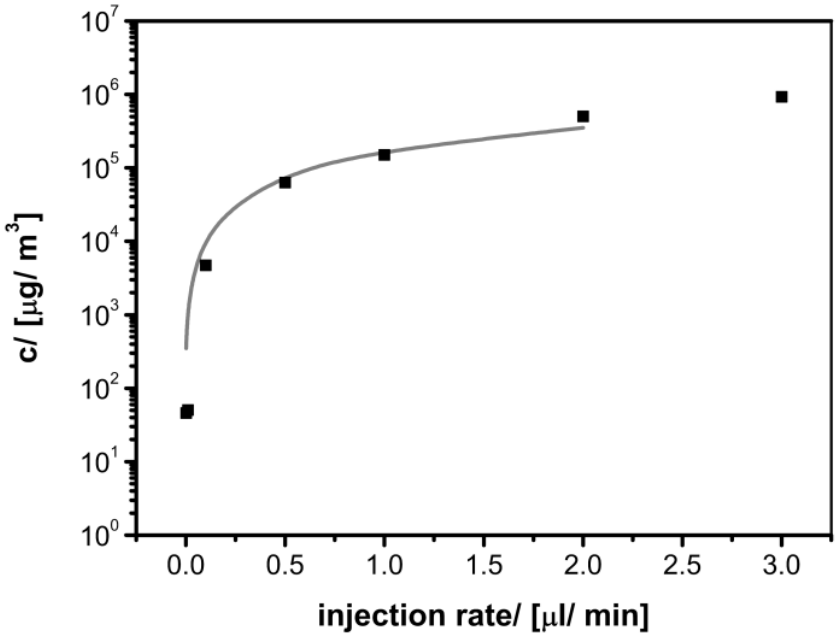
**SI-1**

*TGA data of $Ti(O^{iso}Pr)_4$ in $N_2$ atmosphere.*



**SI-2**

*Concentration of the precursor in the aerosol determined experimentally (data points) and calculated theoretically (grey curve) as a function of the injection rate.*



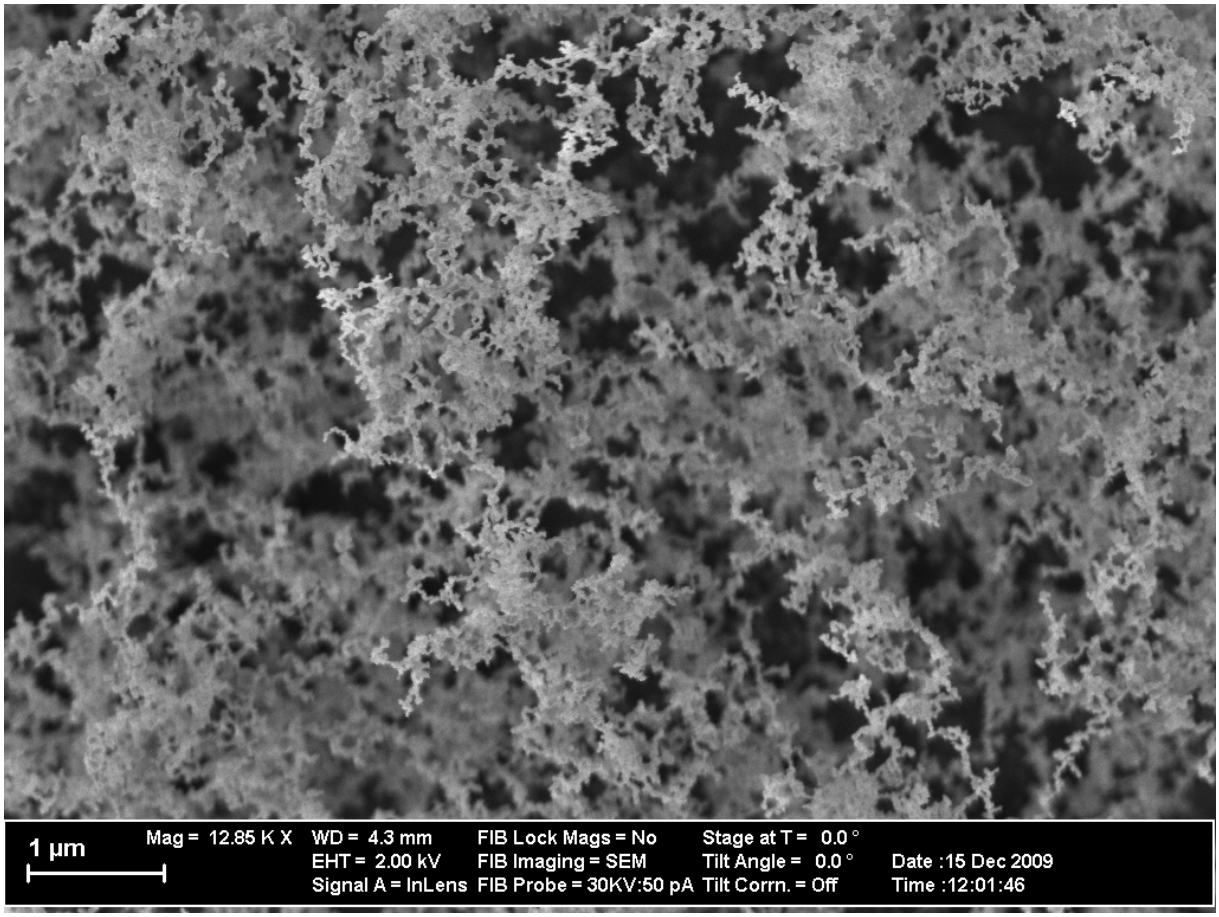
**SI-3**

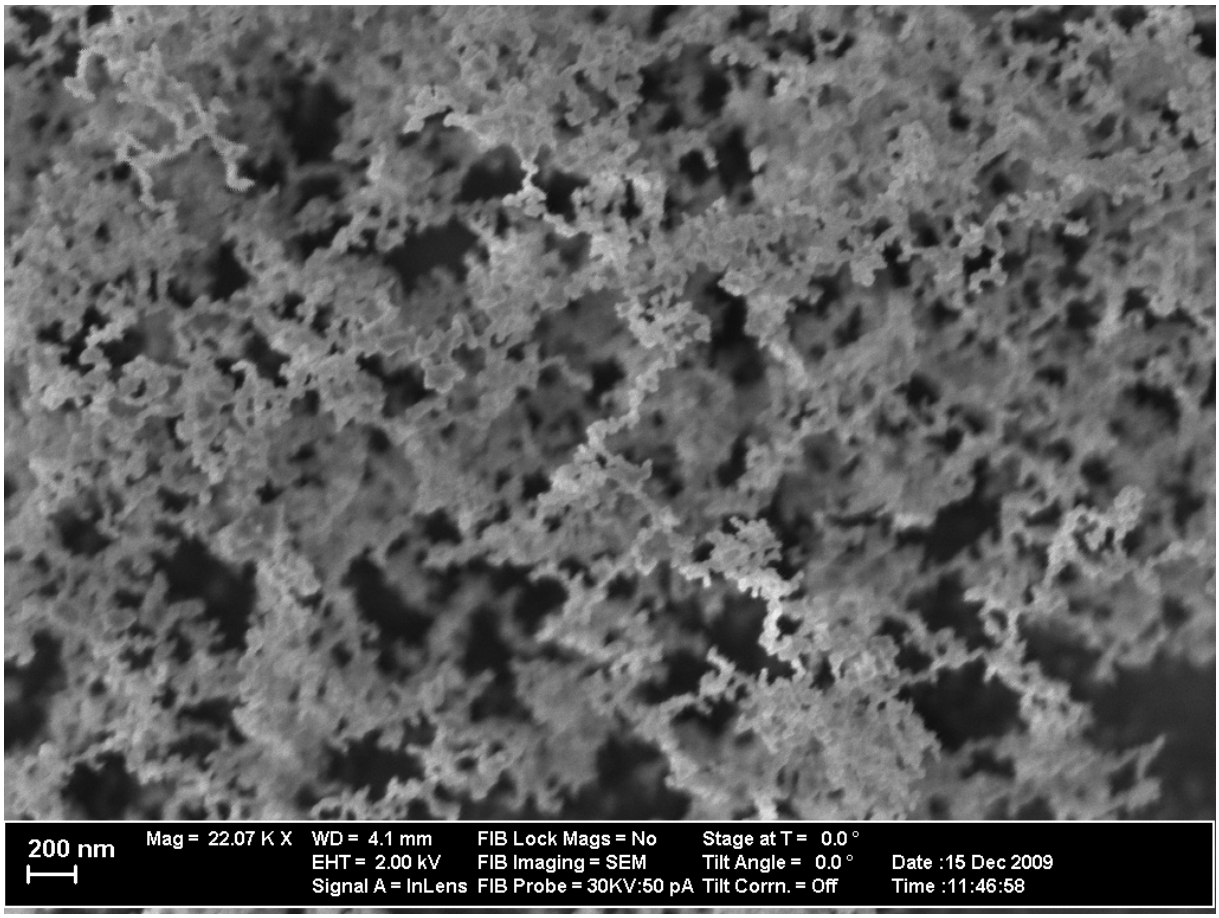
*Photographic images of 0.5 g of different $TiO_2$ materials*


The mass of each sample is 500 mg: (A) a commercially available $TiO_2$ powder (≈ 100 nm crystal size of $TiO_2$ and BET surface area of 9.2 $m^2/g$), aerogel-like $TiO_2$ materials prepared in the gas phase using precursor flow rates of 50 (B), 15 (C) and 3 (D) μl/min.

**SI-4**

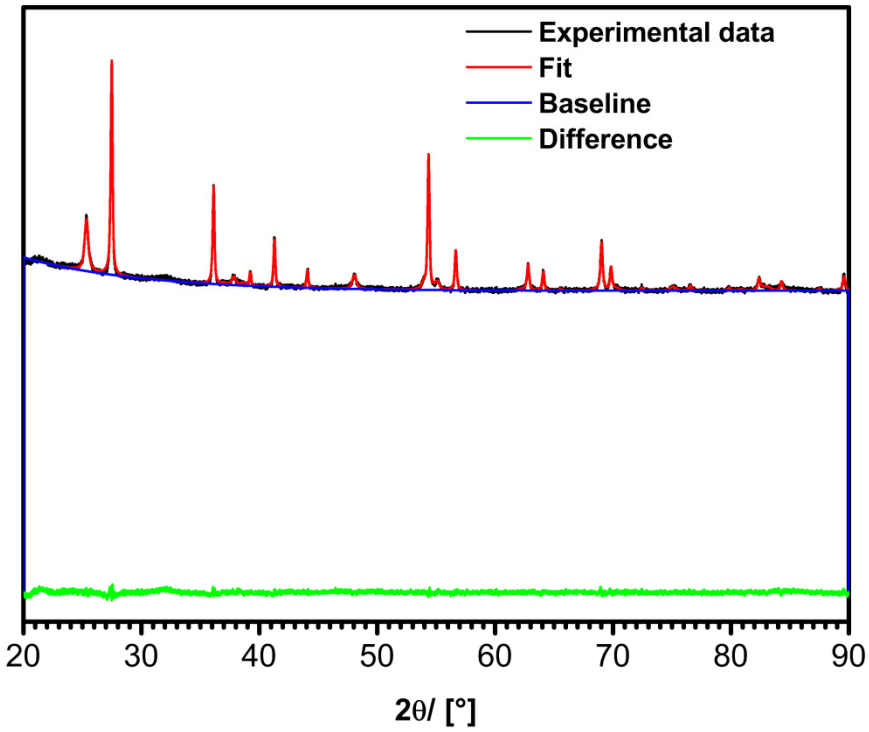
*SEM images of an alternative $TiO_2$ aerogel showing higher porosity*




200 nm
Mag = 22.07 K X
WD = 4.1 mm
EHT = 2.00 kV
Signal A = InLens
FIB Lock Mags = No
FIB Imaging = SEM
FIB Probe = 30KV:50 pA
Stage at T = 0.0 °
Tilt Angle = 0.0 °
Tilt Corrn. = Off
Date :15 Dec 2009
Time :11:46:58

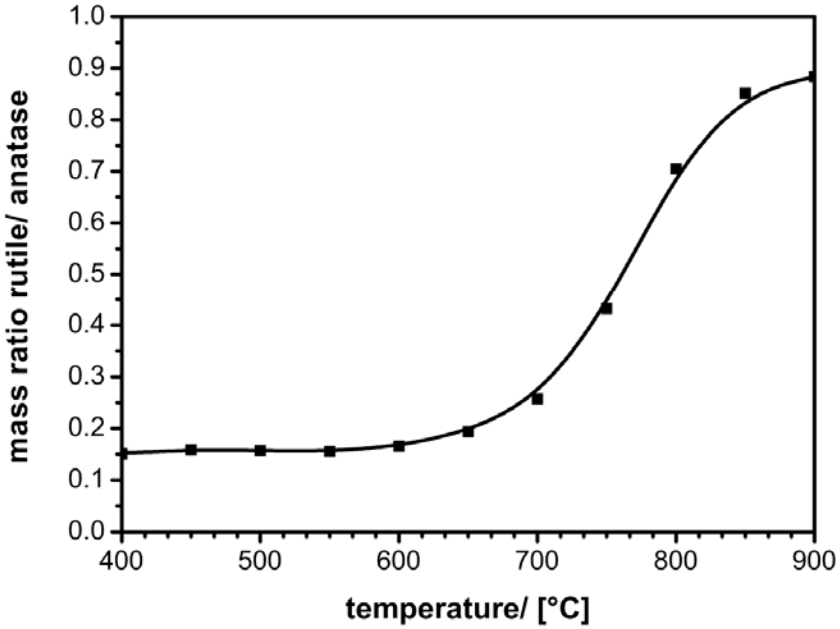
**SI-5**:

Evaluation of PXRD data.

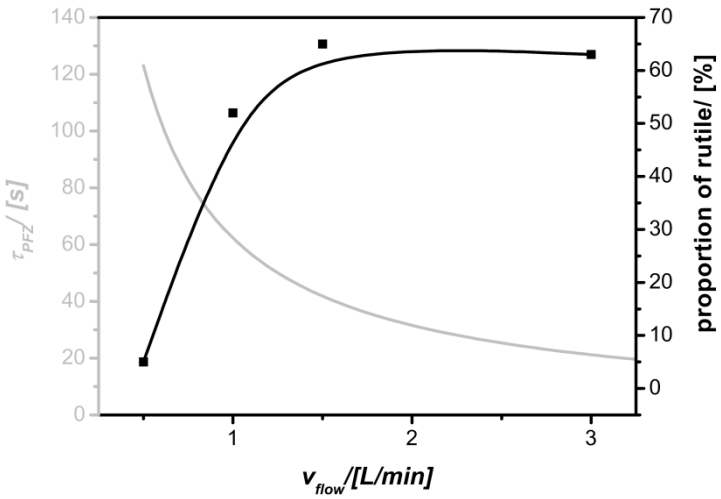


**SI-6**:

Phase transition anatase → rutile determined from PXRD data.

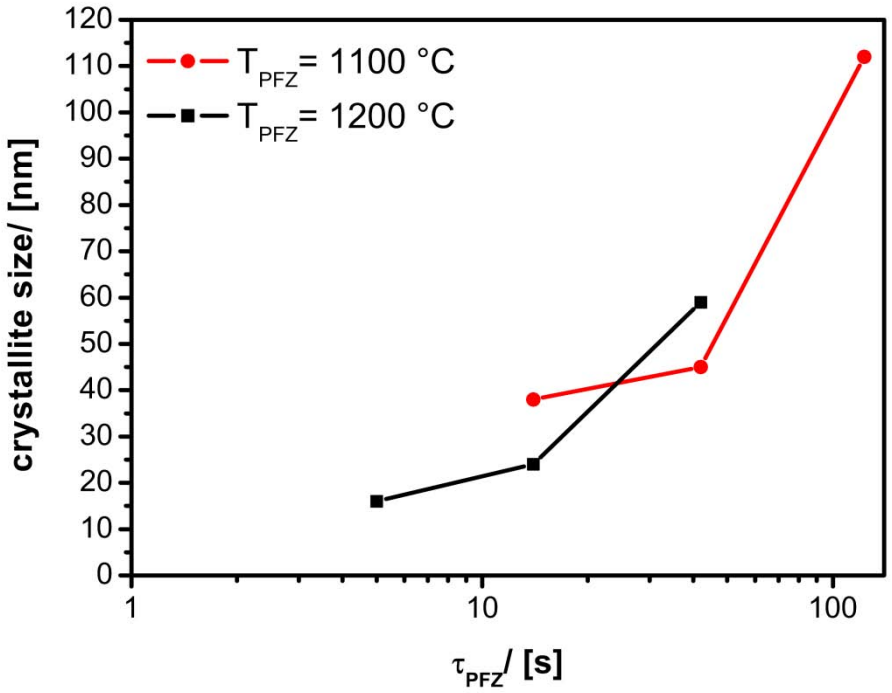



Phase composition and residence time as a function of flow rate.



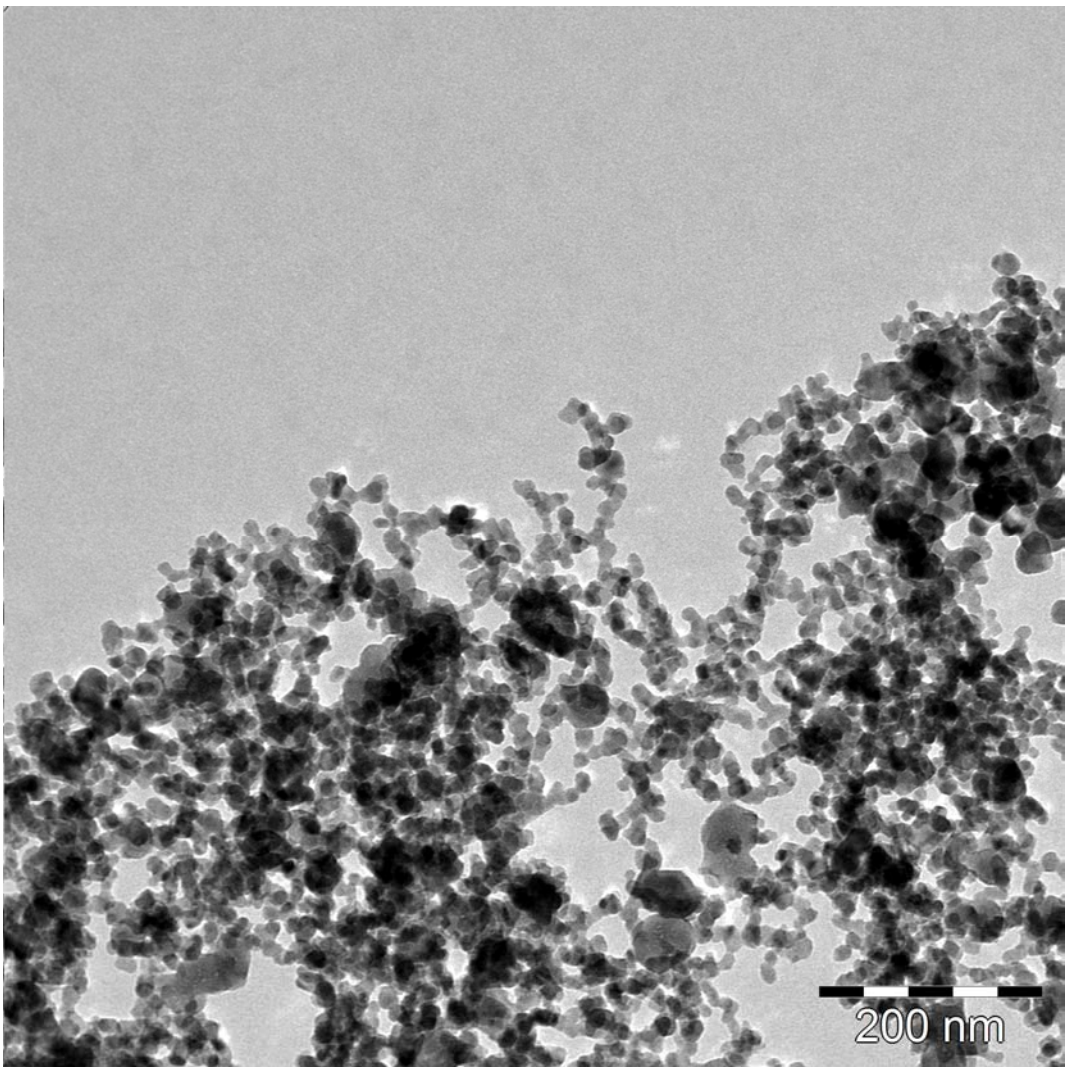
**SI-7:**

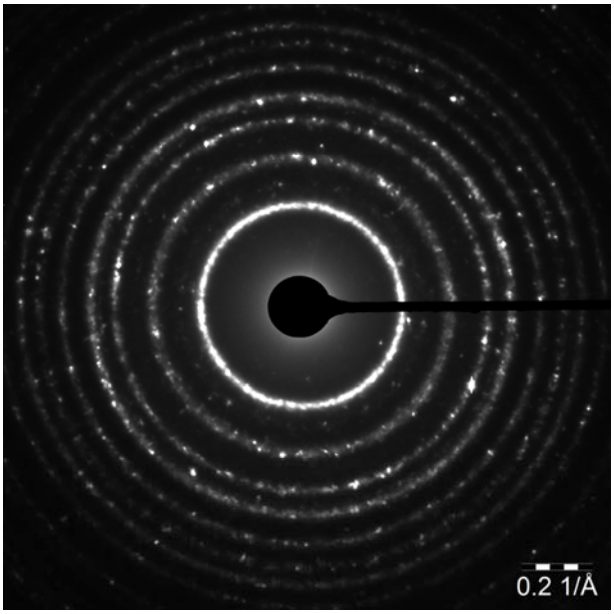
Influence of the residence time $\tau_{PFZ}$ on crystallite size for two different temperatures.



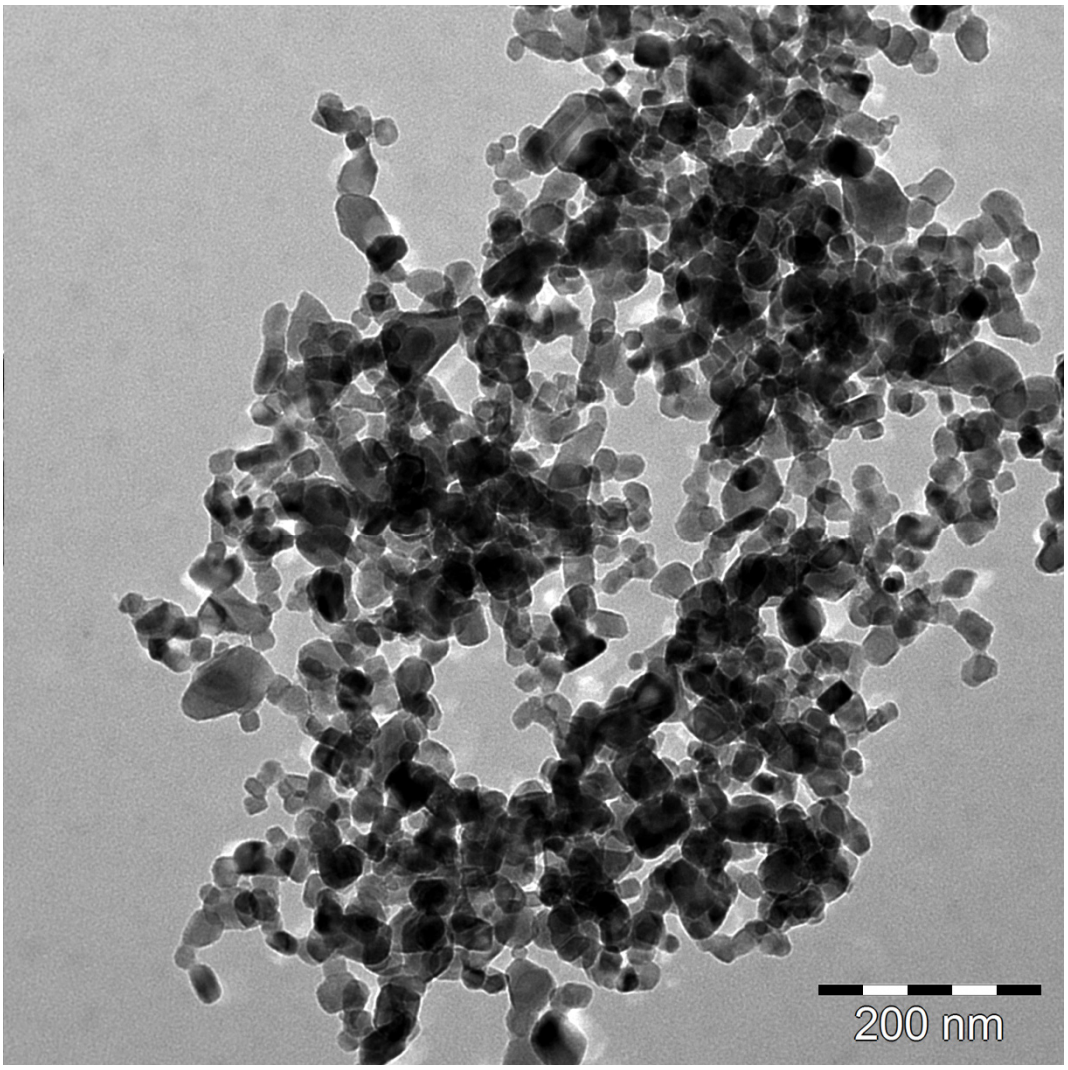
**SI-8:**

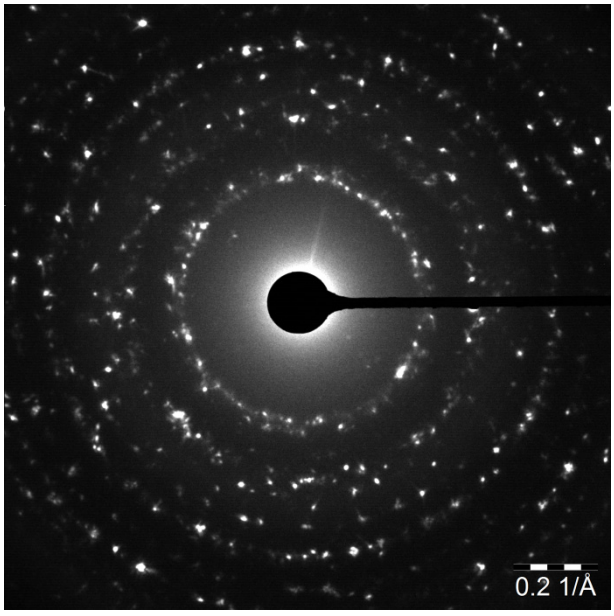
TEM images of the material shown in Fig. 5a at higher magnification.



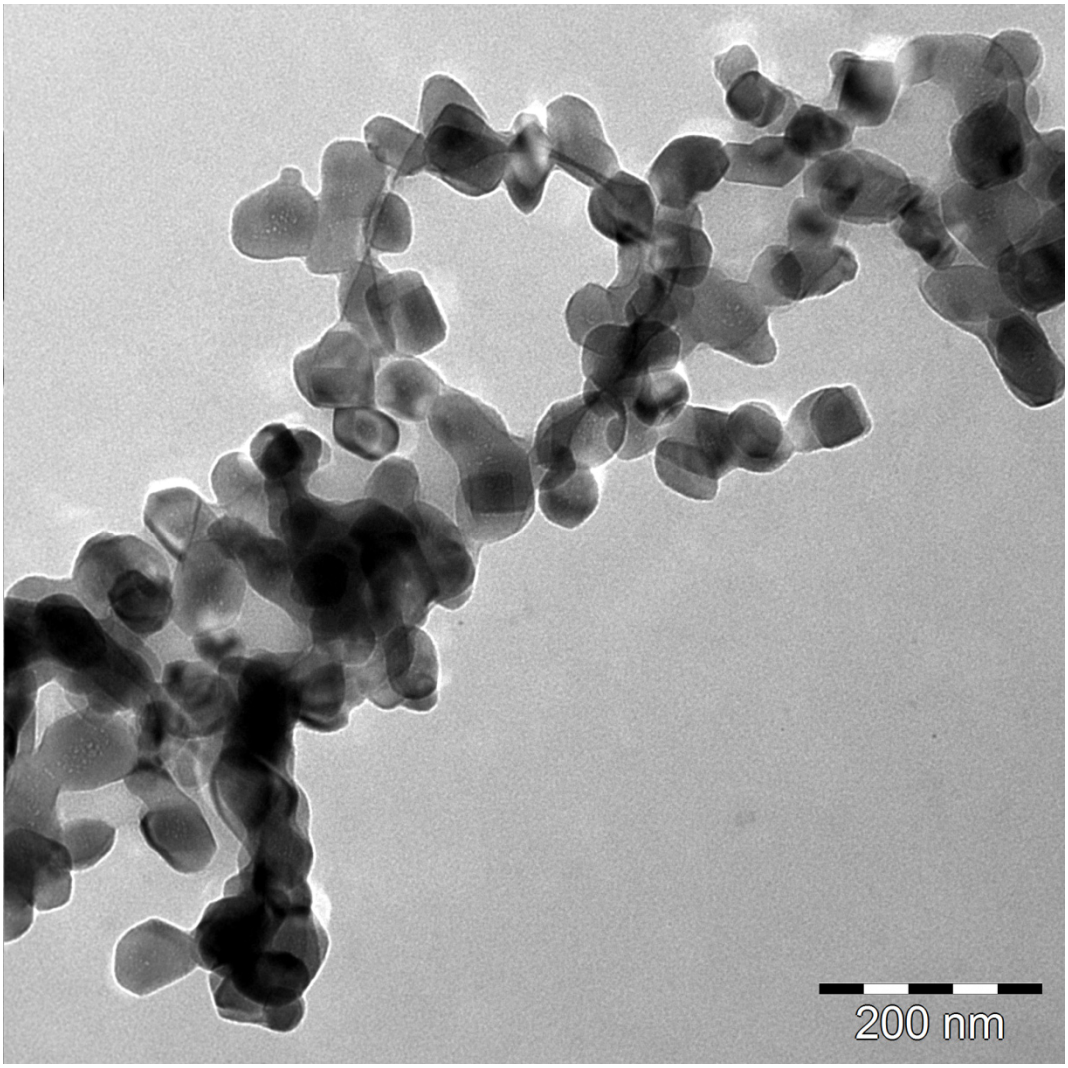



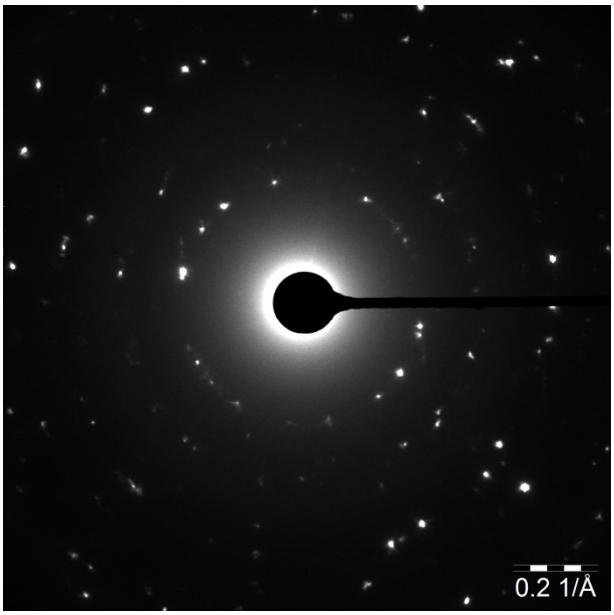
TEM images of the material shown in Fig. 5b at higher magnification.



TEM images of the material shown in Fig. 5c at higher magnification.

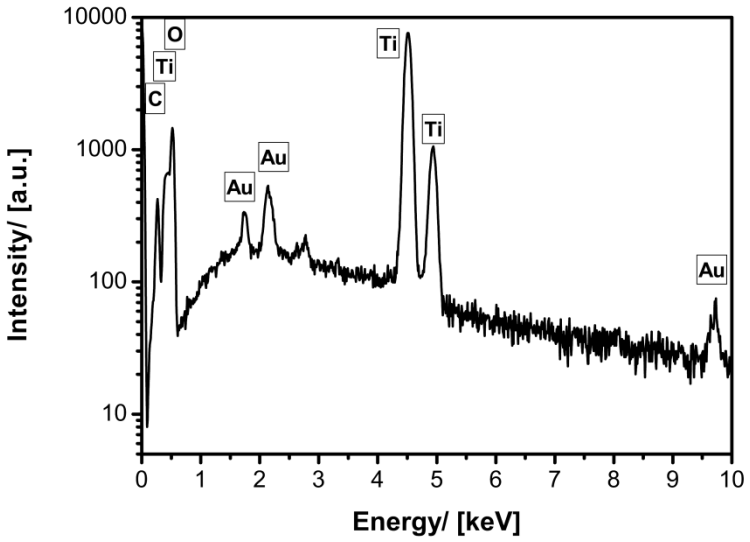


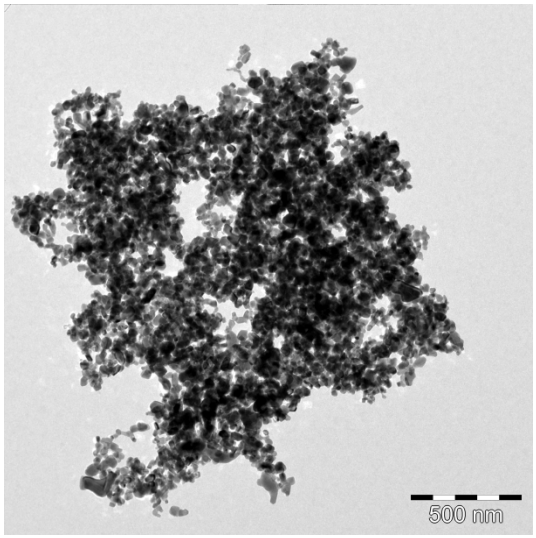
**SI-9**:

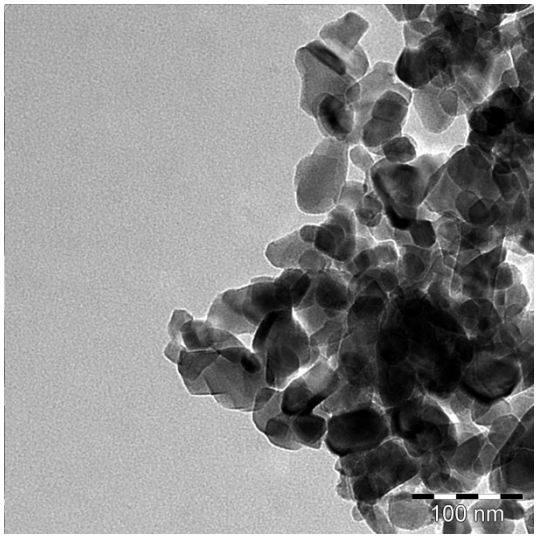
Additional analytical data for the Au containing $TiO_2$ aerogel-like materials.

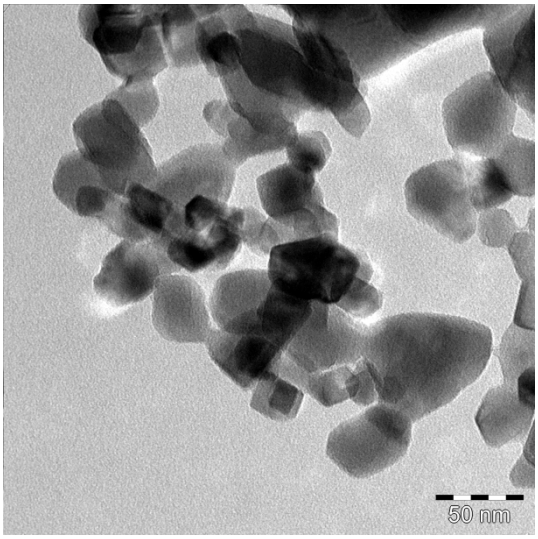
*EDX-analysis of catalyst 2:*



TEM data of catalyst 2 (0.9% Au, $TiO_2$); three magnifications:



*PXRD-analysis:*